

An Unusual Habitat for the Rough File Shell, *Lima scabra* (Born, 1780)

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(1 Plate)

ON A COLLECTING TRIP in April 1972 to St. John, United States Virgin Islands, the junior author discovered an unusual habitat for the Rough File Shell, *Lima scabra* (Born, 1780). This nesting species is common under rocks in shallow water (ABBOTT, 1954: 371), but sometimes, as this report will show, it nests in a different habitat which results in a profound distortion of the shell.

The discovery was made at Mary Point on the north-east coast of the island. The area consists largely of volcanic rock. Next to the shore, the sea bottom drops off sharply to form a terrace at a depth of 15 feet (4½ m), but a narrow rocky beach remains above the high tide level. A fringe of elk-horn and brain coral occurs on the submerged terrace. Lying on the narrow beach were some boulders of brain coral in fresh condition, apparently dislodged and washed ashore during the winter storms. On the underside of these boulders were found burrows of the Giant Date Mussel, *Lithophaga antillarum* (Orbigny, 1846), some of which still contained empty shells. Eight specimens in good condition, a few up to 100 mm long, were taken.

The *Lima* was found imprisoned in one of these burrows (Figure 1) and since the entrance to the burrow was narrower than the shell, the aperture had to be widened by hacking at the margins before the collector could free the bivalve. The *Lima* is 32 mm wide and 54 mm long, the burrow being 150 or 175 mm deep and only slightly wider than the shell. The burrow was also a little more rounded than the oval burrows in which the *Lithophaga* were found.

The distortion apparently caused by this restricted habitat on the shell of *Lima* consisted of compressing the normally rounded sides of the shell so that it had to assume a quadrilateral outline with almost parallel sides (cf. Figures 2, 3). It may be supposed that the *Lima*, when still young, entered the burrow and grew there, its increasing size being forced into the distorted shape by the configuration of the *Lithophaga* burrow. If not disturbed, *Lima* can occupy the same nest all its post-larval life (DENNIS, in JEFFRIES, 1863: 91). However, if the nest is torn open, the animals are able to swim away rapidly and construct a new burrow when the opportunity is provided (DENNIS, *ibid.*: 90; JOHNSON, 1931: 126; GILMOUR, 1967: 220).

We found specimens similarly distorted in the following collections:

Museum of Comparative Zoology: Alicetown, Bahamas; no. 13871;

United States National Museum: Tortugas; no. 458-267;

Academy of Natural Sciences, Philadelphia: St. Thomas; no. 55740 (2 specimens, "in madrepor").

The specimens in the Academy, interestingly enough found also in coral, measured:

height	width
45 mm	29 mm
54 mm	29 mm

These measurements indicate that the shells increased normally in height, but the increase in width was limited by the constriction imposed by the sides. Collectors have informed the senior author that such distorted *Lima* specimens are occasionally collected in other localities. The distortion of the valves thus results from this specialized habitat.

GILMOUR (1967: 218) described the method by which *Lima hians* (Gmelin, 1791) widens the crevice in which its nest is to be built. "The animal usually started to burrow in a crevice between some of the larger fragments of the substratum. The crevice was enlarged by swimming backwards some distance, pausing, and swimming back into the crevice with considerable force. On the final propulsive stroke into the crevice the antero-ventral tentacles were quickly tucked between the shell valves and when the valves were pulled together the edges of the valves were driven into the crevice. The shell valves were then opened - so enlarging the crevice. By repetition of this cycle of movements the animal burrowed into the substratum." It may be assumed that the Mary Point *Lima*

entered the *Lithophaga* burrow with considerably less effort and remained in its protected shelter until it was collected.

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Explanation of Figures 1 to 3

- Figure 1: *Lima scabra* (Born, 1780) in *Lithophaga* burrow
Figure 2: *Lima scabra*, normal shell
Figure 3: *Lima scabra*, distorted shell